

REMARKS

The present Amendment is being filed within the statutory period for reply, which is scheduled to end on July 10, 2007. By this Amendment, claims 10-11 and 13-20 have been canceled, independent claims 1 and 21 have been amended, and new independent claim 22 has been added.

§ 112 Rejections

The Examiner has rejected claims 1-21 under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, the Examiner has noted that the term “the energy self-absorption properties” in claims 1 and 13 lacks antecedent basis, and that the term “specifically associated with the energy self absorption properties” is unclear. Claim 13 has been canceled, and applicants have amended claim 1 to recite “data representing energy self-absorption properties” rather than “said data being specifically associated with the energy self-absorption properties” as was originally present. By this amendment, applicants have rectified the antecedent basis problem, and removed the language highlighted by the Examiner as problematic. As such applicants believe that the Examiner’s rejections under § 112 have been fully overcome.

§ 103 Rejections

The Examiner has rejected each of pending claims 1-21 under 35 U.S.C. § 103(a) as being unpatentable over Richie (EP0951921) in combination with Yates et al. (US2002/0186748) and Takayama et al. (US5,730,527).

As noted by the Examiner, the cited Richie reference does teach the use of memory devices associated with a fiber that can be used to store data related to the fiber. The primary focus of Richie, however, is to store fiber usage data to ensure that fibers are not used beyond their proper life cycle. The cited Yates reference is directed at temperature sensing mechanisms similar to those described in the present application, however, such features are only incidental at best to the present invention. The Examiner has also cited Takayama on the basis that it teaches

“that the absorption properties of the optical fibers alter the output of temperature measuring devices employing the fibers.” (Office Action, Page 2, para. 4). On the basis of these disclosures, the Examiner has concluded that all pending claims would have been obvious to one skilled in the art. Applicants respectfully disagree.

First, applicants disagree with the relevance of the Takayama reference and the propriety of using this reference as the basis for an obviousness rejection. Takayama is directed to ways to measure the temperature of molten metals, and in particular the use of optical fibers to do so. These optical fibers are immersed in the molten metal and detect infrared rays that are transmitted through the optical fibers. Col. 1, lines 40-45. Takayama notes that problems associated with using such optical fibers include the fact that the optical fiber is consumed during temperature measurement, which continually reduces the length of the fiber, which in turn progressively reduces known transmission losses and leads to a distorted temperature measurement as time goes on. Col. 1, lines 49-55. The invention of Takayama provides a very specific way to measure temperature, which includes splitting the light beam into two components, filtering each through a separate radiation thermometer, and using a complicated formula for calculating the output of each in an effort to account for reduced length and resulting reduced transmission losses. These teachings are completely irrelevant to the present invention for anything other than the bare suggestion that transmission losses affect light transmitted through the length of an optical fiber, which applicants concede is a known principle.

The present invention, to the contrary, is concerned with *energy self-absorption* of a fiber optic device, not ordinary transmission losses for transmitted light as in Takayama. As described in the specification, energy self-absorption refers to the tendency of fiber optic devices to absorb some of the transmitted energy and heat themselves up. This issue is of concern with fiber optics used to *delivery energy*, rather than those used to passively receive transmitted light as in Takayama. It is also of particular concern for diffusing fiber optics where the delivered energy is transmitted through a diffuser, leading to self-heating particularly in the vicinity of the diffuser. Accounting for this self-heating is important in medical applications where controlled and accurate energy delivery is essential.

Thus, applicants fail to see the relevance of Takayama as it does not address energy self-absorption properties of a fiber as described in the present invention, is not likely to be concerned with them as the device of Takayama is a *temperature measurement device* for molten metals and **not** an energy delivery device for medical applications, and does not teach or suggest in any way measuring such losses and/or using them to control/adjust the application of energy through an energy delivery device.

Although applicants do not believe the cited references warrant amendment of the claims, in an effort to further distinguish the claims and move this case to issuance, applicants have amended independent claim 1 to include the limitations of original dependent claims 10 and 11, and thus now recite both a light diffusing section at a distal and a temperature sensor substantially adjacent to the light diffusing section. Claim 1 now also specifically recites “an optical fiber . . . being adapted to deliver generated laser energy therethrough.” Finally, amended claim 1 now recites that “during use of said medical treatment system, said measured temperature and said data representing the energy self-absorption properties are provided to said medical treatment system.”

As stated above, none of the cited references address, let alone teach, suggest or render obvious, measuring energy self-absorption properties of a diffusing energy delivery device. The references are similarly lacking with respect to programming data representing such properties into a memory device of the optical fiber and providing such data in conjunction with a measured temperature to the medical treatment system. Accordingly, applicants believe that independent claim 1, as amended, and dependent claims 2-9 and 12 are patentable over the cited references. Reconsideration is respectfully requested.

Independent method claim 21 has been amended to include many similar limitations as amended claim 1, and further specifically recites the steps of reading a measured temperature and calibration parameters indicative of self-heating characteristics of the energy delivery device, and

calculating a corrected temperature value using said calibration parameter and said measured temperature; and

adjusting said power level in response to said corrected temperature value.

As stated, the cited references fail to teach or suggest measuring self-heating characteristics of an energy delivery device, and further fail to teach or suggest using such characteristics in combination with a measured temperature to adjust the power level of the energy delivery device. As such claim 21 is also believed to be patentable over the cited references.

Finally, new independent claim 22 has been added which is drawn to a medical treatment system in its entirety, including an energy generator and energy delivery device, and reciting features of the latter similar to those set forth in claim 1. Thus, for the reasons provided above, applications believe that claim 22 is also in condition for allowance.

Reconsideration and allowance of all pending claims is respectfully requested.

The Commissioner is hereby authorized to charge any fee that may be due in connection with this Amendment to deposit Account No. 10-0750/END-5122.

Should any minor points remain prior to issuance of a Notice of Allowance, the Examiner is requested to telephone the undersigned at the below-listed telephone number.

Respectfully submitted,

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